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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/864,824	05/24/2001	Kuorong Chiang	9744	2390

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EXAMINER

WONG, LESLIE

ART UNIT PAPER NUMBER

2177

DATE MAILED: 10/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/864,824

Applicant(s)

CHIANG, KUORONG

Examiner

Leslie Wong

Art Unit

2177

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 and 12 is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Specification***

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it exceeds 150 words limit. Correction is required. See MPEP § 608.01(b).

### ***Drawings***

2. The drawings are objected to because they fail to show necessary textual labels of features or symbols in Figs. 4 and 5 as described in the specification. For example, placing a label, "hash join mechanism", with element 400 of Fig. 4, would give the viewer necessary detail to fully understand this element at a glance. A descriptive textual label for each numbered element in these figures would be needed to better understand these figures without substantial analysis of the detailed specification. Any structural detail that is of sufficient importance to be described should be labeled in the

drawing. Optionally, the applicant may wish to include a table next to the present figure to fulfill this requirement. See 37 CFR 1.83. 37 CFR 1.84(n)(o), recited below:

"(n) Symbols. Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols which have a universally recognized conventional meaning and are generally accepted in the art. Other symbols which are not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable.

(o) Legends. Suitable descriptive legends may be used, or may be required by the Examiner, where necessary for understanding of the drawing, subject to approval by the Office. They should contain as few words as possible."

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5-7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Liu et al.** (U.S. Patent 6,263,331 B1) in view of **Paulley** (U.S. Patent 6,516,310).

Regarding claims 1, 5, 9, and 10, **Liu et al.** teach a method for joining an inner table and an outer table in a database in response to a query statement having an inclusion operator, said method comprising:

a). providing an inner table (Fig. 6, element 601);

b). providing an outer table having zero or more records for inclusion with said inner table (Fig. 6, element 601);

Although **Liu et al.** do not clearly state that the outer table having records for inclusion. However, it indicates that the system determines which rows in the outer tables **satisfy a selection criteria** (i.e., all criteria). Since inclusion or exclusion operator (i.e., IN and not IN) is one of the user selection criteria, **Liu et al.** therefore teaches the inclusion criteria.

d). creating a hash table from said left table (col. 10, lines 39-42);

e). obtaining a hash value from said right table (col. 9, lines 48-52);

f). probing said hash table with a said hash value from said right table to determine if said hash value matches a value in said hash table (col. 10, lines 43-46); and

g). if said outer hash value matches said value in said hash table, then evaluating the actual values and, if the join condition is satisfied, including said row of said outer table in a result (col. 10, lines 47-48).

c). **Liu et al.** do not clearly teach the step of transposing said outer table and said inner table to form a right table and a left table, respectively;

**Pualley**, however, teaches swapping the left outer joins and right outer joins to determine the best-cost strategy for the query (col. 18, lines 8-12). Examiner submits that swapping the joins to place them at their best positions is equivalent to transposing the inner and outer tables, since they solve the similar problem which is optimizing the query in order to save processing costs and increase the performance.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to transpose the inner table and outer table to place the tables in the their best positions in order to save the processing costs for the queries and to increase system performance.

Regarding claims 2 and 6, **Liu et al.** further teach wherein scanning said inner table is accomplished one row at a time per processor (col. 9, lines 1-3).

Regarding claims 3 and 7, **Liu et al.** further teach wherein said step of obtaining a hash value from said right table includes calculating a hash value (col. 9, lines 48-50).

5. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Liu et al.** (U.S. Patent 6,263,331 B1) in view of **Paulley** (U.S. Patent 6,516,310) as applied to claims 1-3, 5-7, 9, and 10 above, and further in view of **Bestgen et al.** (U.S. Patent 6,134,546).

Regarding claims 4 and 8, **Liu et al.** do not explicitly teach wherein said step of obtaining a hash value from said right table includes retrieving a pre-calculated hash value from a row header.

**Bestgen et al.**, however, teach a Hash table structure includes a header pointing to a root page including multiple pointers to buckets for hash values (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the hash values in the header as this would expedite the process of obtaining the hash values for evaluating selection criteria.

### ***Allowable Subject Matter***

6. Claims 11 and 12 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Prior art of record fails to teach a combination of elements including capability to recognize an inclusion merge join and replace with said inclusion hash join having an inner table and an outer table, wherein said inner table and said outer table are assigned as a left table and a right table, respectively, and said left table is hashed into a hash table and hash values from said right table are used to probe said hash table to determine if an inclusion condition is satisfied for a row of said right table.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Pederson et al.** (U.S. Patent 5,864,842)

**Cochrane et al.** (U.S. Patent 6,081,801)

**Lindsay et al.** (U.S. Patent 6,253,197)

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**Chadha et al.** (U.S. Patent 5,706,495)

**Bhashyam et al.** (U.S. Patent 6,618,729)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leslie Wong whose telephone number is (703) 305-3018. The examiner can normally be reached on Monday to Friday 9:30am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Breene can be reached on (703) 305-9790. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Leslie Wong  
Patent Examiner  
Art Unit 2177

Lw  
October 18, 2003



JEAN R. HOMERE  
PRIMARY EXAMINER